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# Have we enough New England blackberries?

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What are we to believe about our wild blackberries? Has nature bestowed on our flora really many more than those few well-accredited species which have come down to us from our botanical forefathers, or are our woods and fields crowded with the brave number which recent years have spread on the botanical page and which, by the token of their array, may yet be infinitely multiplied?

Our wise forefathers in the restraint of their learning were cautious in their treatment of this suspiciously unconventional group of plants—too cautious, it may be, and perhaps not so wisely restrained after all. Quite possibly their example of conservatism carried its influence too securely into the widened outlook of the present day and some form of reaction was predestined to follow in the accounting. Be this as it may, the spell has finally been broken, and lo,—the fragments!

What is the blackberry situation at this hour? It is indeed an unhappy heritage. Where angels had feared to tread the ground has been traversed, and so unforbearingly, notwithstanding the briers, that not any semblance of a pathway has been suffered to exist.

My study of the flora of Nantucket in course of publication has led me, reluctant, into the general blackberry problem. No evasion was possible. Many unusual forms of blackberries are found on Nantucket and, in order to discuss them at all, it was necessary first to determine whether any or all of them had been

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accounted for in recent print. If the study of what had thus been offered should fall into no final Rafinesquian entanglement, there was the hope that it might unfold some long concealed but consistent and beautiful multiple structure of evolution's handiwork. And if, peradventure, there should be disclosed any sad mixture of dislocated facts and naïve fancies, then those unwisely conservative botanical forefathers should be held to their proper blame. In any case, the problem required some attempt at solution. Hence these lines.

Two fundamental facts about our blackberries should not long escape the most casual student. Even the least unstable species possess some kind of ready pliancy, which answers, often with marked emphasis, to slightly changed conditions of growth; and, further, all the species by some freely practised method of versatility acquire variously in combination with their own proper characters the features of associated members of their group. These facts import an extraordinary natural variability and undoubtedly, also, a facility in hybridizing which is perhaps not exceeded in any other genus of our flora.

A number of years ago, before these facts were well apprehended, the blackberries of York County, Maine, excited my wonder and engaged my particular attention. Who knows but that for a warning sounded by President Brainerd the observer of those days might have complacently occupied the pitfall which thus invited any artless and too self-assured purveyor of spurious species? President Brainerd's admonition, which was not unduly apprehensive, as later events have shown, may well be quoted here: "Our American blackberry is so excessively variable that in order to be completely understood it may in time need to be presented under as many mental types. But we most sincerely hope that only experts—after years of study—will attempt it."*

Since the day of that admonition, York County, Maine, has become distinguished as a stronghold of blackberry trouble. Here a Canadian flora is thrown out along a partly deforested country fronting the ocean shore, which has also received a counter-invasion of the coastwise flora of more southern New England. The condition of compression within this coastal strip may well be supposed to produce a tension between two distinct floras not usually brought into contact, and to place many plants in unaccustomed relations of contiguity. Among plants capable of hybridizing such conditions could scarcely fail to give the opportunity.

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*Rhodora 2: 23, 24. F 1900.

The intricate taxonomic problem presented by our blackberries has long been to the writer a most fascinating subject of attention, but without the opportunity of adequate study, and the conclusions which the present situation in the group has here called prematurely into expression are advanced with many reservations.

Something like fifty new blackberry names have been added to the lists during recent years. Of these the majority, some forty or more, have been promulgated by Mr. W. H. Blanchard from the general New England region. Full sets of specimens bearing these new names have been distributed. They have been well collected and better herbarium material need not be desired. Those deposited in the herbarium of the New York Botanical Garden have been utilized in the present study.

It would scarcely yet be the part of wisdom to accept any one of these new names as denoting a valid species nor, on the other hand, is there sufficient warrant in our present knowledge for reporting all of them as being without standing. I should suppose, however, that some sixty per cent. of the number might be allowed to pass into the category of synonyms; the remainder, possibly with a few exceptions, appear to disclose themselves as scarcely doubtful hybrids. It should be said at once, however, that no sufficient proof, properly so considered, can be adduced in support of this view. But every reasonable probability of circumstantial evidence points to such a conclusion; it seems to meet the requirements of a correct working hypothesis among the multitude of interrelated forms which the group presents and to satisfy various theoretical tests. Nevertheless, in so general a commitment of alleged new species it is more than possible that mistakes have been made and that there may be some members of wholly unblemished origin which should be rescued from the asylum of bastards.

As to the valid New England blackberries I see little reason to doubt that we have at least eleven species in the *Eubatus* group, here alone considered, as follows:

*Rubus allegheniensis* Porter.
*argutus* Link.
*canadensis* L.
*cuneifolius* Pursh.
*frondosus* Bigelow.
*nigricans* Rydb.
*hispidus* L.
*procumbens* Muhl.
*Baileyanus* Britton.
*Enslenii* Trat.
*flagellaris* Willd.

Under these names, if I have not wholly misconceived the problem, all or nearly all more recent names may be disposed somewhat in accordance with the arrangement in the following tables. The problem is made very intricate by reason of the extreme variability of the apparent hybrids, which would appear to have acquired a compound tendency to variation through their double inheritance. And there are indications that compound hybrids have also to be reckoned with. What appear to be the product of the same crosses present themselves under many different aspects according as they resemble one or the other parent or variously combine the characters of both. And the crosses appear to reflect also the fluctuating forms of development to which the parents are subject under varied conditions of growth and in different parts of their range. So freely do our species appear to hybridize that there would seem to be little reason to doubt that every one of them holds the capability of crossing with every other one. There is thus among the species here enumerated, omitting *Rubus cuneifolius*, only a local plant in New England, a potentiality of forty-five primary hybrids, and nearly all of this possible number appear to be accounted for by existing forms. Some of these seem to announce their parentage quite unmistakably, while others offer mere suggestions only, easily misinterpreted, of what their origin may be. The final word is not for the systematist but for the experimental culturist and must rest on the demonstration which induced crossing can alone supply.

Not all of the species here taken to be valid are secure against the test, having its advocates, that species may not intergrade.

It would need a very keen botanical eye to discover inviolable boundary lines separating *Rubus allegheniensis* from *Rubus canadensis* on the one hand and from *Rubus argutus* on the other; and between *Rubus argutus* and *Rubus frondosus* there exists a range of forms equally open to a double claim. Among the trailing species the lines of separation are even less effectively protected.

There would thus appear to be little room for new species in this group. Its units are established at such narrow intervals that the organic circumference of each undoubtedly invades that of one or more of the others. In many another genus of plants wherein the species move within a more contracted radius, differences far less pronounced than those which mark mere forms or states of our *Rubi* might be evidence enough of distinct organic type. The genus *Rubus*, however, would appear to represent the growing point of a genetic phylum subject to great variational activity and rapid and impermanent change and, not least to be considered, ready hybridization. In this view even wide variations in these plants are to be understood as the expression of a concentrated phylogenetic energy rather than as evidence of a completed organic segregation.

All of our species, however, show regional and local variations which, if unstable, are more or less obvious. For those who enjoy the exploitation of varieties here is a pristine field where their name is legion. For myself I have never yet been able to comprehend by what theory of differentiation the infinite varieties of plants are cast into two main categories—the to be named and the to be nameless. Not less among the blackberries than in many another group the accustomed eye finds varieties well marked for it everywhere, and moves freely out beyond the range of charted taxonomy not to be overtaken by any strained following of printed names. Shall we dare to hope, notwithstanding, that the foundations builded for this group by our forefathers may not ever be weighted by some crataegal structure which it is ill fitted to support? It has perhaps been thought that the genus *Rubus* was subject to an interpretation similar to that which has been unfolded in the genus *Crataegus*. To my observation there is an unmistakable failure of parallel between the composed and resistent, if often slight, differences between the species of *Crataegus* and the often strongly expressed but weakly held variations scattered broadcast among the forms of *Rubus*.

My own study of this group, inadequate though it has been as a basis for assured conclusions, has led me notwithstanding, to make one addition to the number of our species. No need arises, however, for adding a new name to an already overburdened genus, for it seems possible with reasonable certainty to correlate this plant with the *Rubus flagellaris* of Willdenow, a trailing species allied to *Rubus procumbens*, which appears never to have been interpreted. This plant, which occurs on Nantucket and on Long Island, seems to possess the individuality of a true species and I have not been able to see how it can be accounted for as a hybrid. Furthermore it seems to be required as a parent of a series of Nantucket hybrids otherwise difficult or impossible to understand. This plant will be discussed in detail in another connection.

It is more than probable that some other species of eastern blackberries than those here accepted may yet come to light. In different parts of their ranges there is to be observed a perturbation among some of our hybrid forms which would seem to indicate either the influence of some unrecognized unit of species quality or else a process of intercrossing among primary hybrids very difficult to elucidate.

The wide fluctuations in the characters of all our blackberries under differing environments does not wholly obscure the fact that these variations in many cases take recognizable directions. It will doubtless ultimately be possible to define such tendencies with some approach to systematic form but, to use again the words of President Brainerd, it is to be hoped "that only experts—after years of study—will attempt it."

Specimens representing all the hybrids here proposed which have not already been described in detail as species will be deposited in the herbarium of the New York Botanical Garden. And it is intended that descriptions shall follow as opportunity may allow.

Current practice seems to require that the names of hybrid plants should bear the authority of the author by whom they were first proposed. It may be questioned whether by this usage the citation of an author's name is not a little overstrained. Unlike the case of a true species, the precise relationship and identity of a hybrid plant is verifiable by experimental proof. Its name, formed from the combined names of its parents, comes into being automatically with the birth of the hybrid itself. It is not the creation of any author. And it may well be asked why its already compound structure should be further burdened with the name of an author by whom a certain one, possibly of many, forms of the hybrid was first made known.

No reason appears for instance why the author of the present paper should be cited as authority for the names of crosses which it becomes necessary here first to employ. Nevertheless, in order more certainly to divest the subject from all nomenclatorial claims in these pages and to allow the free treatment of a tabular presentation, I wish to be understood merely as pointing out the probability of the occurrence of the hybrids mentioned, not as announcing that they are known unmistakably to exist.

RUBUS CANADENSIS L.
- *R. elegantulus* Bld.
- *R. amabilis* Bld.
- × ALLEGHENIENSIS: *R. ovarius* Bld. and *R. pergratus* Bld. so unite characters of *R. canadensis* and *R. allegheniensis* that a presumption of hybrid origin from those species seems unavoidable.
- × NIGRICANS: *R. peculiaris* Bld. appears to belong here.
- × HISPIDUS: *R. multiformis* Bld. may well be a form of this cross. Certain specimens of *R. vermontanus* Bld. are not to be separated from *R. multiformis.*
- × BAILEYANUS: The characters of *R. recurvicaulis* Bld. would appear to point to its origin in the parentage here suggested.
- × PROCUMBENS: *R. recurvicaulis*, var. *inarmatus* Bld., and *R. multiformis*, var. *delicatior* Bld., should be studied in the field with reference to their probable relationship with *R. canadensis* on the one hand and *R. procumbens* and *R. Enslenii* on the other.

In regard to *Rubus Randii* (Bailey) Rydb. there seems to be good reason to suppose that it is either a reduced form of *R. canadensis* or a hybrid of that species. I have not seen the type specimens but, judging from current labeling of botanical sheets, there would seem to be no definite conception among collectors of just what the supposed species is or should be expected to be, and weak forms of a number of different blackberries have been referred to it. Among specimens so determined, spindling forms of *R. canadensis* are clearly to be recognized, and I have seen a few specimens of aberrant plants which actually suggested a cross between *R. canadensis* and *R. triflorus* Rich.

RUBUS ALLEGHENIENSIS Porter.

*R. glandicaulis* Bld.

× CANADENSIS: See under *R. canadensis.*

× ARGUTUS: Nantucket; Long Island.

× FRONDOSUS: Nantucket; Long Island.

× NIGRICANS: *R. frondisentis* Bld.

× HISPIDUS: *R. permixtus* Bld. *R. flavinanus* Bld. is perhaps a form of this cross or possibly a compound hybrid involving *R. nigricans, i. e., R. allegheniensis* × *vermontanus.*

× PROCUMBENS: Long Island.

× ENSLENII: *R. invisus* Bailey is possibly to be explained as a hybrid of these species. Certain herbarium specimens, presumably authentic, readily allow the suggestion, but, never having seen the living plant, I may altogether misunderstand it.

× BAILEYANUS: Long Island. *R. Jeckylanus* Bld. I think may be referred here.

*Rubus sativus* Brainerd, a name for which, I believe, President Brainerd through some misadventure of editor or printer was unintendedly on his part made to stand sponsor, represents a plant which I am inclined to regard as a weakened shade form of *R. allegheniensis* or perhaps some mixture of that species and *R. Baileyanus.*

RUBUS ARGUTUS Link.

*R. floricomus* Bld.

*R. Andrewsianus* Bld.

*R. amnicolus* Bld.

× ALLEGHENIENSIS: Nantucket; Long Island.

× FRONDOSUS: Nantucket; Long Island.

× NIGRICANS: *R. ascendens* Bld., in part. Nantucket; Long Island.

× HISPIDUS: Long Island.

× PROCUMBENS: Nantucket; Long Island.
× BAILEYANUS: Long Island.
× ENSLENII: Long Island.
× FLAGELLARIS: Nantucket.
× CUNEIFOLIUS: A plant collected at Tom's River, New Jersey, July 1, 1900, has every appearances of being this cross.

*Rubus amnicolus*, here placed with *R. argutus*, represents one of those intermediate variants between *R. allegheniensis* and *R. argutus* which, with equal reason, might be regarded as a form of either species. When copiously glandular their relationship to *R. allegheniensis* would scarcely be doubted; when glandless or nearly so they are not to be separated from racemose forms of *R. argutus*.

RUBUS FRONDOSUS Bigel.
  *R. recurvans* Bld.
  *R. recurvans*, var. *subrecurvans* Bld.
  *R. arundelanus* Bld.
  *R. Rossbergianus* Bld.
  *R. philadelphicus* Bld.
× ALLEGHENIENSIS: Nantucket; Long Island.
× ARGUTUS: Nantucket; Long Island.
× NIGRICANS: *R. abbrevians* Bld. Nantucket; Long Island.
× HISPIDUS: Nantucket.
× PROCUMBENS: *R. multispinus* Bld. Nantucket; Long Island.
× BAILEYANUS: Nantucket; Long Island. *R. arenicolus* Bld. is very close to this hybrid.
× ENSLENII: Long Island.
× FLAGELLARIS: Nantucket.

RUBUS NIGRICANS Rydb.
  *R. vermontanus*, var. *viridifolius* Bld.
  *R. jacens* Bld.
  *R. tardatus* Bld.
  *R. junceus* Bld.
  *R. Groutianus* Bld.
  *R. semisetosus* Bld.
× CANADENSIS: *R. peculiaris* Bld.
× ALLEGHENIENSIS: *R. frondisentis* Bld.

× ARGUTUS: *R. ascendens* Bld., in part. Nantucket; Long Island.

× FRONDOSUS: *R. abbrevians* Bld. Nantucket; Long Island.

× HISPIDUS: *R. setosus* Bigel.; *R. vermontanus* Bld., in part; *R. trifrons* Bld.; *R. cubitans* Bld.; *R. hispidus*, var. *major* Bld. The plants described under these names are more or less intermediate between *R. nigricans* and *R. hispidus* and make up a group of connected forms showing the interplay among them of the same characters in slightly different combinations. *R. vermontanus* approaches very close to forms of *R. hispidus* × *procumbens*.

× PROCUMBENS: *R. semierectus* Bld. Long Island. *R. plicatifolius* Bld., although very dissimilar to *R. semierectus*, I am inclined to regard as a form of the same cross, perhaps a semi-pathological state.

× BAILEYANUS: Long Island.

× ENSLENII: Long Island.

× FLAGELLARIS: Nantucket.

RUBUS HISPIDUS L.

× CANADENSIS: *R. multiformis* Bld.

× ALLEGHENIENSIS: *R. permixtus* Bld.

× ARGUTUS: Long Island.

× FRONDOSUS: Nantucket.

× NIGRICANS: See under *R. nigricans*.

× PROCUMBENS: Nantucket.

× BAILEYANUS: Long Island.

× ENSLENII: Long Island.

× FLAGELLARIS: Nantucket.

RUBUS PROCUMBENS Muhl.

× CANADENSIS: See under *R. canadensis*.

× ALLEGHENIENSIS: Nantucket; Long Island.

× ARGUTUS: Nantucket; Long Island.

× FRONDOSUS: *R. multispinus* Bld. Nantucket; Long Island.

× NIGRICANS: *R. semierectus* Bld. *R. plicatifolius* Bld. Long Island.

× HISPIDUS: Nantucket.

× BAILEYANUS: *R. roribaccus* Bailey, which I find almost always associated with *R. procumbens* and *R. Baileyanus*, appears to show no characters not derivable from one or the other of these species.

× ENSLENII: *R. geophilus* Bld., in part. Nantucket; Long Island.

× FLAGELLARIS: Nantucket.

RUBUS BAILEYANUS Britton.

× ALLEGHENIENSIS: *R. Jeckylanus* Bld. Long Island.

× ARGUTUS: Long Island.

× FRONDOSUS: *R. arenicolus* Bld. Nantucket; Long Island.

× NIGRICANS: Long Island.

× HISPIDUS: Long Island.

× PROCUMBENS: See under *R. procumbens.*

× ENSLENII: Nantucket; Long Island. *R. geophilus* Bld., in part.

× FLAGELLARIS: Nantucket.

RUBUS ENSLENII Trat.

*R. subuniflorus* Rydb., in part.

*R. geophilus* Bld., in part.

× ALLEGHENIENSIS: See under *R. alleghenicnsis.*

× ARGUTUS: Long Island.

× FRONDOSUS: Long Island.

× NIGRICANS: Long Island.

× HISPIDUS: Long Island.

× PROCUMBENS: *R. geophilus* Bld. in part. Nantucket; Long Island.

× BAILEYANUS: Nantucket; Long Island.

× FLAGELLARIS: Nantucket.

RUBUS FLAGELLARIS Willd.

× ARGUTUS: Nantucket.

× FRONDOSUS: Nantucket.

× HISPIDUS: Nantucket.

× PROCUMBENS: Nantucket.

× BAILEYANUS: Nantucket.

× ENSLENII: Nantucket.

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